



# Septic System Primer

## The basics and Vermont on-site regulations

Lake friendly living  
means using lakeshore  
BEST MANAGEMENT  
PRACTICES

### BMP

Septic System Primer

### STANDARDS

#### Structures/Septic

- Properly functioning Leachfield

### LAKE BENEFITS

Knowing the layout of your septic system and how it works ensures that you will get the most efficient use out of it, while preventing any contamination to the lake. Properly functioning septic systems keep the lake safe for human and wildlife use. Read the companion BMP "Ensuring Septic System Quality" to learn more about assessing and caring for your wastewater treatment system.

### PERMITTING

More information on Regional Office Permits, permit conditions, and the importance of complying with permit conditions can be found at the Dept. of Environmental Conservation's Drinking Water and Ground Water Protection at:

[www.anr.state.vt.us/dec/dwgwp/poregionalofficescompliance.htm](http://www.anr.state.vt.us/dec/dwgwp/poregionalofficescompliance.htm).



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### Description and Purpose:

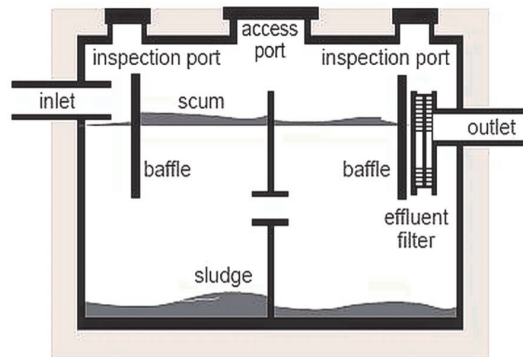
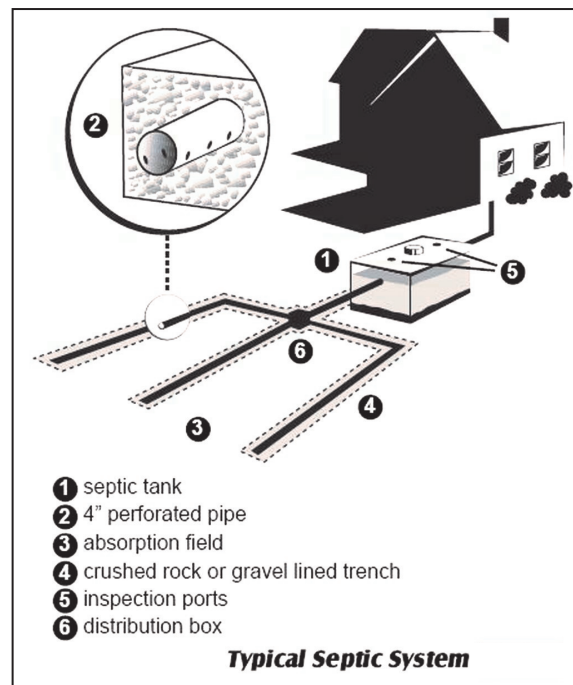
Septic systems are wastewater treatment systems that collect, treat, and disperse wastewater generated by a home or business. The wastewater is treated and discharged to the soils rather than collected and transported to a wastewater treatment plant. The typical septic system consists of a septic tank and a leachfield to disperse the wastewater into the ground.

The first point of treatment of a septic system is the **SEPTIC TANK** that is a buried, watertight container usually made of concrete, fiberglass or polyethylene. Its job is to hold the wastewater long enough for solids to settle to the bottom (forming sludge) and for the oil and grease to float to the top (as scum).

The tank should have an **EFFLUENT FILTER** at the outlet to keep solids from leaving the tank and clogging the leachfield.

Many systems include a **DISTRIBUTION BOX** that splits the flows from the septic tank into multiple leach lines in the dispersal system.

The dispersal system or **LEACHFIELD** can be completely below the natural grade (ground level) and consist of an absorption bed or trenches, be placed at-grade, or be a mound, above ground. Further treatment of the wastewater occurs as it flows into and through the soils. If the leachfield is uphill of the septic tank, or if an at-grade or mound system is constructed, there typically will be a **PUMP TANK** to dose or pressurize the dispersal system.



Cross section of a two-compartment septic tank

### Learn More About Septic Systems:

- 5-minute video on septic systems – "It's All Connected": [www.ewashtenaw.org/government/departments/environmental\\_health/recycling\\_home\\_toxics/green\\_media/septic\\_video](http://www.ewashtenaw.org/government/departments/environmental_health/recycling_home_toxics/green_media/septic_video).

Animated interactive model of how a

- septic system works [www.gbra.org/septic.swf](http://www.gbra.org/septic.swf)

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Adequate treatment of household waste from camps is critical to maintaining lake health. While it is not the only potential source of pollution to a lake, a poor septic system can introduce both nutrients and pathogens to a lake. The effects may be especially noticeable locally in the form of increased plant and algae growth offshore of a camp.

### Potential threats from lakeshore septic systems:

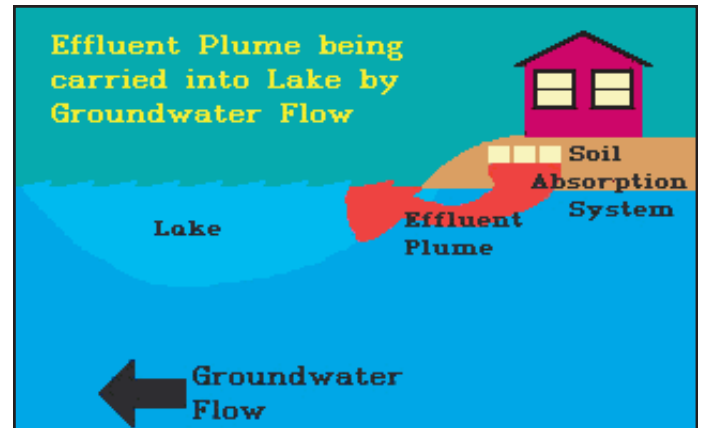
**Pathogenic (disease-causing) bacteria** – if a system is not working correctly and leachate is directly entering the lake, you and others may be exposed to high bacteria levels and potentially disease-causing organisms. (Note that such a system may not show any on-shore indications of malfunction.) This can happen under several conditions including when the soil below the leachfield is too shallow or too porous and leachate quickly joins the groundwater. Along a lakeshore groundwater is usually flowing toward the lake and entering the lake water through the lakebed.

**Nutrient enrichment** – a poor system may be creating a local in-lake spot of high nutrients (phosphorus and nitrogen) resulting in a dense patch of plants and/or algae. (Again, note a system may have this problem and not show any on-shore signs).

**Surfacing leachate** – a wet muddy spot on the lawn, perhaps only during wet periods, or an area of excessive grass growth are signs of a surfacing leach field. The soil around the leachfield is not porous enough and doesn't allow leachate to filter through soil. This condition can also occur when the leachfield becomes clogged due to inadequate maintenance.



Nutrient enrichment from malfunctioning septic systems can add to the pollution that leads to toxic algae blooms.



### Vermont's On-site Septic Regulations

All new septic systems in Vermont are required to obtain a state permit. For lakeshores, these regulations mean:

- Septic systems will have to be permitted if the use of a camp changes from seasonal to year-round. This may or may not require an upgrade of the system to meet standards.
- Septic systems will have to be upgraded to meet standards if camps are expanded to include new bedrooms or plumbing.
- Any work done on a septic system will require its upgrade to meet state standards, however, when working on an existing system, owners are entitled to a "best fix" permit to deal with difficult locations.
- All new land subdivisions will require a suitable site and design of a septic system meeting state standards (unless the owner signs off ever being able to develop it).
- New "alternative" septic system designs are being reviewed and allowed on an on-going basis by the Wastewater Management Division of VTDEC. These alternatives will allow systems specialized for shallow soil or small sites, facilitating retrofitting of some shoreland systems.